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ABSTRACT

Programed instruction can be applied fruitfully in teaching about music within and outside Western culture. The content of such study could include cognitive material, such as the social role of music in various cultures, the history of music, the visual identification of instruments, and perhaps notational skills; performance skills, dealing with unfamiliar metric organizations, scale resources, or notational schemes; and development of aural perceptional ability. Preparation of software materials first requires specifying objectives, writing the program, and testing its effectiveness. Experts must be encouraged to prepare these materials and teachers must be encouraged to use them. Although we cannot expect programed instruction to accomplish more than the instructional objectives we list, it can supplement the teacher in four important ways: as an outside source of information, as a diagnostic tool, as a remedial aid, and as further stimulation for the precocious student. Through programed instruction, our students will no longer be limited to understanding music of their own culture. Instead, they will be polymusical. (JK)

IMPLICATIONS OF PROGRAMMED INSTRUCTION FOR A WORLD STUDY OF MUSIC[1]

by

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To look about us is to observe changes and processes of change which technological innovations spawn. The suggestion that these changes are advances is hotly debated by conservative elements. Whether it is an advance or not, there is no doubt that programmed instruction is one of the technological innovations that has already taken its place in that revolutionary stream of change.

Others at this conference have discussed what programmed instruction is: a self-instructional process in which (1) the student is provided with instruction in much the same way that a tutor would instruct--in a logical sequence and in step sizes which are appropriate to the task being learned and appropriate to the individual needs of the learner; (2) the student is required to make some sort of response to each of the instructional steps--evidences of the student's ability at the moment to cope with the task being learned; and (3) the student is provided with immediate knowledge of the outcomes or results of his response. In addition, some comments will have been made concerning the self-pacing feature of self-instruction which permits the student to go

[1]Adapted from an address to the fourth Plenary Session of the International Society for Music Education Meeting, Dijon, France, July 6, 1968.

slowly or rapidly, depending upon his own needs rather than upon pacing demands to keep up with a classroom of students.

I review these characteristics because if we are to consider the implications of programmed instruction for a world study of music, it is important to know what programmed instruction is. However, as Lysaught and Williams point out, it is equally important to know what programmed instruction is NOT[2]. It is not a MACHINE or mechanical device or even a computer. It certainly is not an audio-visual aid. Occasionally gadgets are used with programmed instructional materials, but programmed instruction is not the gadget. The computer is being explored as an instructional device, but the important point is that the hardware (the gadget) is not as important as the software (the program of instruction).

Nor is programmed instruction a TEST. Many of the instructional items will look like test items because the student is required to make some response such as answering a question, writing in a word to complete a sentence, writing, in musical notation, a melody played, or demonstrating a performance ability on some task. Unlike a test, the purpose for such responses is to provide the student with an awareness of how well he is doing. The test is usually intended to provide the teacher with information.

Of all the many things which programmed instruction is not, one of the most important is that it is not a FORMAT or procedure for organizing and presenting information, in spite of the many attempts by new program writers to develop a different presentation format for their programmed materials. Simply recasting a textbook into sentences with periodic blanks or inserting frequent questions does not make such a book a programmed one.

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[2]Jerome P. Lysaught and Clarence M. Williams, A Guide to Programmed Instruction, New York: John Wiley and Sons, Inc., 1963. pp. 19-21.

To paraphrase B. F. Skinner, what programmed instruction really is, is an arrangement of environment and conditions in such a way that students will be able to learn by themselves, both rapidly and effectively. The key word in that statement is learn, and the proof of the pudding is, do the students learn? I will have more to say about that a little later. But so much now for a description of the IS and the IS NOT of programmed instruction.

Let me address my remarks to the implications which the technological innovation of programmed instruction holds for a world study of music. These implications fall into three general categories: content, preparation, and expectations.

CONTENT

Many groups and individuals speaking out on important issues of Music Education in the past few years have emphasized the need of a world study of music. The specific focus of their comments has been dependent upon the nature of the body of musicians which they represented. Emerging nations of the non-Western world have been interested in developing an understanding of Western musical literature. Illustrative of this is the report presented two years ago at the ISME meeting in the U.S.A. by Elizabeth Partos of the Institute of African Studies, University of Ghana, Legon, Accra. Instruction in stringed instruments (violin, viola, cello, and stringed bass) was being undertaken in a nation where there was no tradition for these instruments and in many places they were not even known. Pavel Ryumin of the Moscow Conservatoire at that same conference outlined the role of professional music education in developing the understanding of other countries' musical cultures. While his concern

was principally for those cultures employing music in a more or less Western tradition, he did point out the importance of studying the music of more remote musical cultures to the extent that he could say, "The word 'exotic' is used in our country [USSR] less and less frequently." The Comprehensive Musicianship Seminar meeting at Northwestern University in the United States in 1965 addressed itself to this concern. It emphasized that the scope of musical training must include any era or culture including non-Western music, jazz, folkmusic, and electronic music. It is obvious that a world study of music is timely, important, and perhaps even urgently required.

Within any study of music, there are potentially three categories of musical learning activity. One is the cognitive aspect which deals with factual information about music. The history of a music or of musical instruments or of musicians in various cultures; national procedures used to preserve the music of a culture; the social role of music in various cultures; or the visual identification of the musical instruments are kinds of cognitive understandings that are developed. In this category musical sounds may not be required to acquire the factual information desired. This is not to suggest that the presence of musical sound is not an important adjunct. It is quite likely, however, that our universities, conservatories, and music schools have not always made effective use of the stimulus of musical sound in developing these cognitive understandings.

The principles of programmed instruction have been effectively applied to subject disciplines outside of music which are concerned essentially with verbal and symbolic material. The knowledge which we

have gained from such applications can be generalized to the field of verbal learning in music. For this reason, let me move on to the second class of learning activity: he development of performance skills.

Performance may take the form of either imitation of sound or the translation of symbols representing sound. In either event the activity is largely kinesthetic and the end result can be serially described. That is, one kinesthetic activity follows a preceding one in some specified organizational scheme. This is true whether the performance depends upon imitation or upon the reading of notational symbols. Instruction therefore must give attention to the ordering process of kinesthetic activity for purposes of presenting a sequence containing tonal or rhythmic components or elements of both.

One of the elements which serves to characterize the music of different cultures is that of metrical organization. In Western music the predominant metrical groupings are 2, 3, 4, and 6 in some singular form. Music of other cultures may be characterized by metrical organizations which in fact avoid groups of 2, 3, 4, and 6. Training members of one culture to perform metrical organizations of another culture is often difficult because each culture has developed conflicting reaction styles dependent upon a familiarity with the most frequently heard and utilized meters. Instruction in unusual meters requries an assessment of the learners' serial responses in musical performance. Utilizing the principles of programmed instruction, Dr. Ihrke at the University of Connecticut has developed a rhythm training device which operates in this fashion. The student has a visual display of the musical notation in front of him as he sits at a keyboard. He listens to a tape which

contains metrical cues and a musical background to accompany the rhythms which he is to perform. Signals on a silent track of the tape trigger "early" or "late" lights if the student's performance does not occur in the proper serial order or is in any way temporally displaced in the serial order. Similar feedback devices in the form of instruments other than keyboard instruments could be developed for purposes of training students in the performance of unusual rhythmic sequences and metrical organizations.

In a similar way, a student's performance of music employing tonal resources requires constant assessment in order that correction and refinement of tonal performance can take place. This assessment can be accomplished by self-comparison in which the student compares what he is doing with that of an aural or of a visual model. A more accurate assessment is obtained by objective external means. Dr. Heller at the University of Connecticut is using a subcarrier discriminator similar to that used in missile tracking for purposes of filtering certain tones and printing out with a pen graph a linear picture of the tones used. Dr. Kuhn at Stanford University is using the computer to provide an assessment of the student's tonal performance. Such devices can be highly effective in training the student to perform unusual tonal resources from other cultures but the cost factor may be a prohibitive one particularly if we envision an <u>immediate</u> attack upon a world study of music.

The third class of learning activity is that of aural perception---the ability to listen to musical sound and to mentally organize it into meaningful form. Evidence of the form may simply be a verbal statement

identifying the modal resource, or its timbre utilization, or perhaps the ethnic source. A more precise evidence would be the translation of the sound into some symbolic representation, either traditional musical notation or an improvised one. Whatever form it may take, the aural perceptual task is essentially one of discrimination or of generalization, or a combination of both. In order to develop discriminative facility it is necessary to utilize material that has high similarity. Discrimination can not be taught by providing the students with dissimilar materials. Such materials require no discrimination because their differences are obvious. To develop generalizing ability it is necessary to utilize materials that appear to be quite different, but in fact are the same. Programmed instruction has proved to be highly effective in developing both discrimination and generalizing skills.

Dr. Garfias, ethnomusicologist at the University of Washington points out the importance of discrimination ability of meters with two Bulgarian dances which are highly similar in their metrical organization of seven. The first, Makedonsko Horo (Example 1) is organized in 3-2-2 while Eleno Mome (Example 2) is in 2-2-3.

A fast Bulgarian dance (Example 3) in conjunction with the highly contrasting (tempo) Turkish Zeybeck (Example 4), is useful for developing a perceptual generalization ability because both are in a metrical organization of nine and in sub-groupings of 2-2-2-3.

Other examples could be drawn to illustrate discrimination or generalization possibilities in other musical elements such as timbre, mode, etc.

In review, the content in a world study of music may include cognitive understanding of factual information about music such as the social role of music in various cultures, the history of music, the visual identification of musical instruments, perhaps notational skills of reading and writing, and others. The content can also include the development of performance skills--performance of unusual metric organizations, unusual scale resources, or the sight reading of previously unfamiliar notational schemes. The content can also include the development of aural perceptual ability---ability embodying modal resources, rhythmic treatment, timbre utilization, structural design, ethnic sources, and any of the other pertinent aspects that relate to aural perception in music.

PREPARATION

Today's formal educational structure reflects the increasing complexity of society in that it develops more and better means of communicating the multifaceted aspects of the society. This is perhaps both bane and blessing. Concern for and development of effectiveness is increased, but the individual within the educational structure is being required to develop facility and the knowledge about many more things than he will ever possibly be called upon to use, not because the knowledge is unimportant or the ability a useless one, but simply because he is a single individual with a limited amount of time, energy and capacity for performing all tasks that may exist. In spite of this, the educational structure seeks to cover the entire spectrum and thus becomes increasingly more removed from the reality of that part of society in which the particular individual will actually live. Because of the

efficiency of the instructional process the relevance of each of the bits of knowledge becomes less obvious. He is removed more and more from doing and involved more and more in "knowing about."

Programmed instruction, as I said earlier, is not a device nor a test nor a format but is a means by which conditions are arranged so that learning takes place. The initial question we must ask ourselves is what is the nature of the learning that we want to take place. Specifically, do we want students to "learn about" the unusual metrical organizations with which they have previously been unfamiliar, or do we want students to "learn how" to perform within these metrical organizations? Do we want students to learn how to perceive and to develop capabilities for organizing these unusual tonal resources? Programmed instruction is effective at developing either "learning about" or "learning how." It can make it possible for students to rapidly and effectively develop the ability to recall factual information, or to describe the suborganization of a thirteen-beat metrical organization. On the other hand it can develop the ability to perform and to perceive these metrical organizations. Which it does will depend upon what the person preparing the materials wants the student to be able to do. As a result the first step to be taken in the preparation of the programmed instructional materials is to identify and specify precisely what it is that we expect students to be able to do that will demonstrate that they have "learned" what we have expected them to learn. You might reasonably ask yourself such questions as, Will he be tapping? Will he be singing? Will he be dancing? At what tempos? What approximation of the correct pitch will be acceptable? How rapidly should improvement be shown? Where will the

student ultimately have to perform these tasks? Under what conditions will he be performing? Or perceiving?

Until these questions and many more similar to them are answered, it is impossible to develop programmed instructional materials. The specification of educational goals in terms of what a student is doing provides a guideline for the author to avoid unnecessary redundancy, to prevent omissions of vital instruction, and to test the effectiveness of his program.

Specifying objectives, writing the program, and testing its effectiveness are the three major steps in the preparation of programmed instructional materials--a task that Lysaught and Williams in A Guide to Programmed Instruction refer to as "inspired drudgery."

Let me emphasize the importance of testing the program for effectiveness. Earlier I paraphrased Skinner's definition of teaching as the arrangement of circumstances in such a way that learning would take place rapidly and effectively. It is important to point out that programmed instructional materials do effect learning--that is, if they are in fact instructional according to Skinner's definition, learning does take place. For this reason the preparation of programmed instructional materials must include a considerable amount of research, experimentation and testing to determine whether or not these materials do in fact teach. If they do not, or if they have not been tested, they certainly do not deserve the name, Programmed-Instruction. Programmed instruction is not a format. It is a package that has proved that it does what it claims it can do.

One obvious implication of programmed instruction as a means for a world study of music is that it permits us to be taught by experts.

Efforts in the past by the dilettante or even the near-expert have provided us with a body of instructional material which has been as frequently misleading as it has been informative. Who are the experts? How can we identify them? How can they be encouraged to engage themselves in such a preparation activity? What are the difficulties of translation in order that all the peoples of the world can make use of the masters' expertise?

And once we have these materials and their translations how do we obtain teacher acceptance for their use? How do we encourage the person to utilize this technological innovation? Or perhaps more importantly how do we encourage the teacher to break out of his traditional mold and to include the music of the world rather than only his circumscribed cultural repertoire? These questions suggest many implications of the use of programmed instruction for a world study of music.

EXPECTATIONS

Before considering reasonable expectations of using programmed instruction in a world study of music, let me cite two cautions. First, we ought not expect more of programmed instruction that is reasonable to expect. If we know what the instructional objectives are we can limit our expectations to these objectives. If we desire more than the programmed instructional materials will provide, we at least know the limitations and know what we ought not to expect and therefore what we will have to develop by other means. Second, we ought not expect programmed instruction to be only the source of basic instruction in lieu of a teacher on the spot and in the classroom. While this function is an important one there are certainly at least four others: One is outside preparation. When

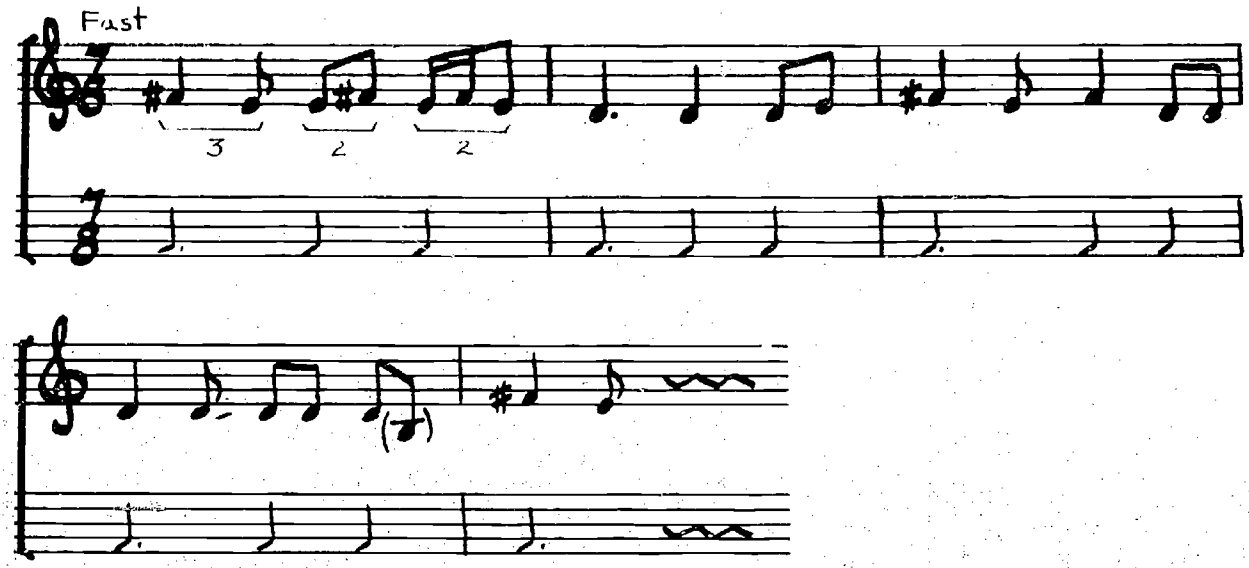
students in a class share a common vocabulary of terms, concepts or skills the possibility of pursuing the subject matter in depth will have been greatly increased. Another use of programmed instruction is as a diagnostic tool. When errors in response have been made this knowledge can serve as the basis for self-analysis on the part of the student. For the teacher it can serve as the basis for specific guidance, for additional practice materials, alternate approaches to the task, or specific review needed. In the same way that an archer profits from observing the flight path of his arrow so the music student and the teacher profit from observing the developmental path of learning. Two other functions of programmed instructional materials in music are those of providing remedial work for the student who is behind in his class, and of providing the precocious student with additional opportunities to maintain his intellectual or artistic interest while the remainder of the class pursues tasks which he has already accomplished.

If programmed instruction should be used for purposes of establishing cognitive understanding of factual information about world music, for developing performance skills with music of various cultures, and for the development of aural perceptual skills of music from all eras and all cultures, what might we reasonably expect to happen? First of all, and most obviously we would have a widely educated youth musically, such as we have never been able to accomplish heretofore. Youth in the Western cultures would no longer be limited in their abilities to major and minor modes, and to metrical systems of 2, 3, 4, and 6. Instead their opportunities would be expanded to a potential world-wide scope. Youth of non-Western cultures, many of whom are now bi-musical would be able to

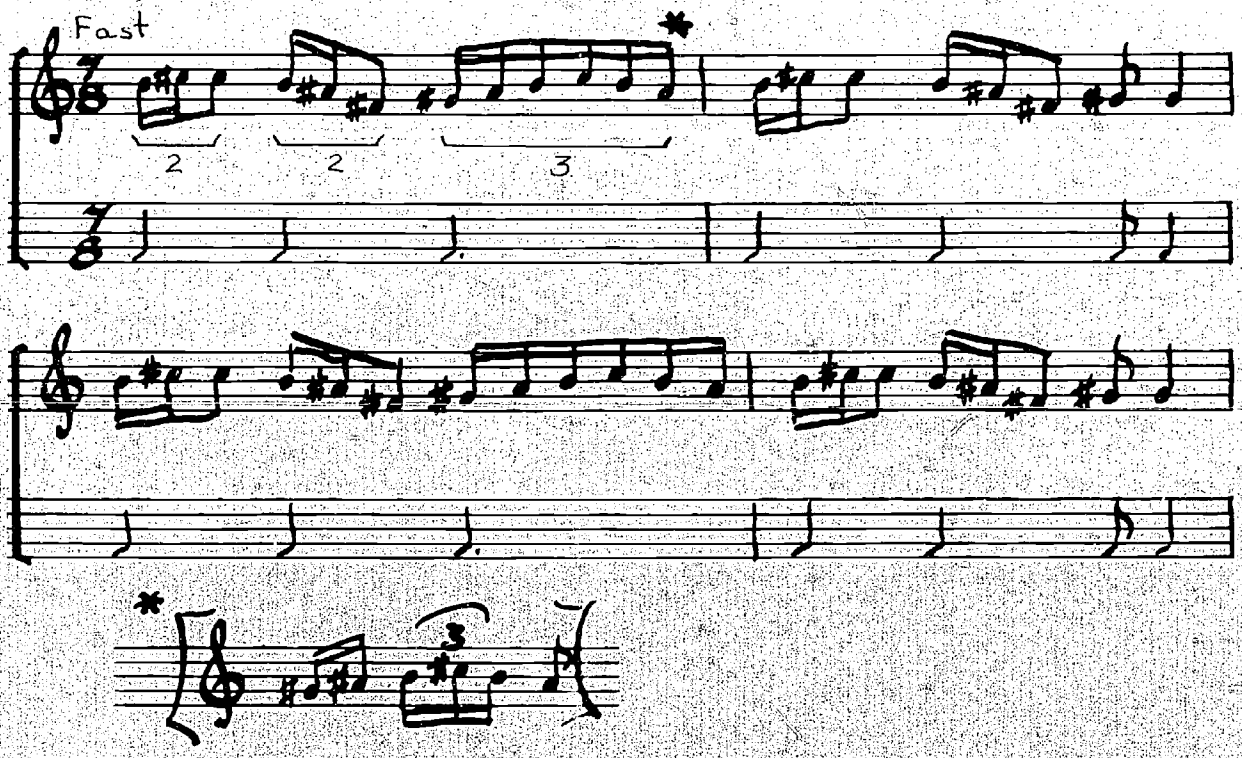
explore the same multi-pronged approach of students in any other part of the world so that we might reasonably expect an emerging youth with a polymusical facility. Such a polymusicality would provide an accurate cultural interchange at the school level which is currently not taking place---and this, with instruction provided by experts.

The idea of developing such a polymusicality demands the identification of a broad base of musical behaviours. A concern for such a study is mounting today in the USA, but such a concern ought to be world-wide. Our shrinking world requires an intercultural understanding. Such an understanding calls for a high cooperative international effort, and this in turn demands intercultural willingness. Without meaning to be presumptuous, permit me the extravagance of proposing that concerned musicians and organizations, such as the Music Educators National Conference and the International Society for Music Education, examine carefully these implications of the use of programmed instruction as well as of other of the technological media for a world study of music; that we set about to identify the kinds of cross-cultural musical objectives that are relevant for the youth of the world: and that we identify and encourage those individuals and groups in our various cultures who could, to assist in the development of programmed instructional materials which, when properly used, would contribute to this task of developing a world study of music.

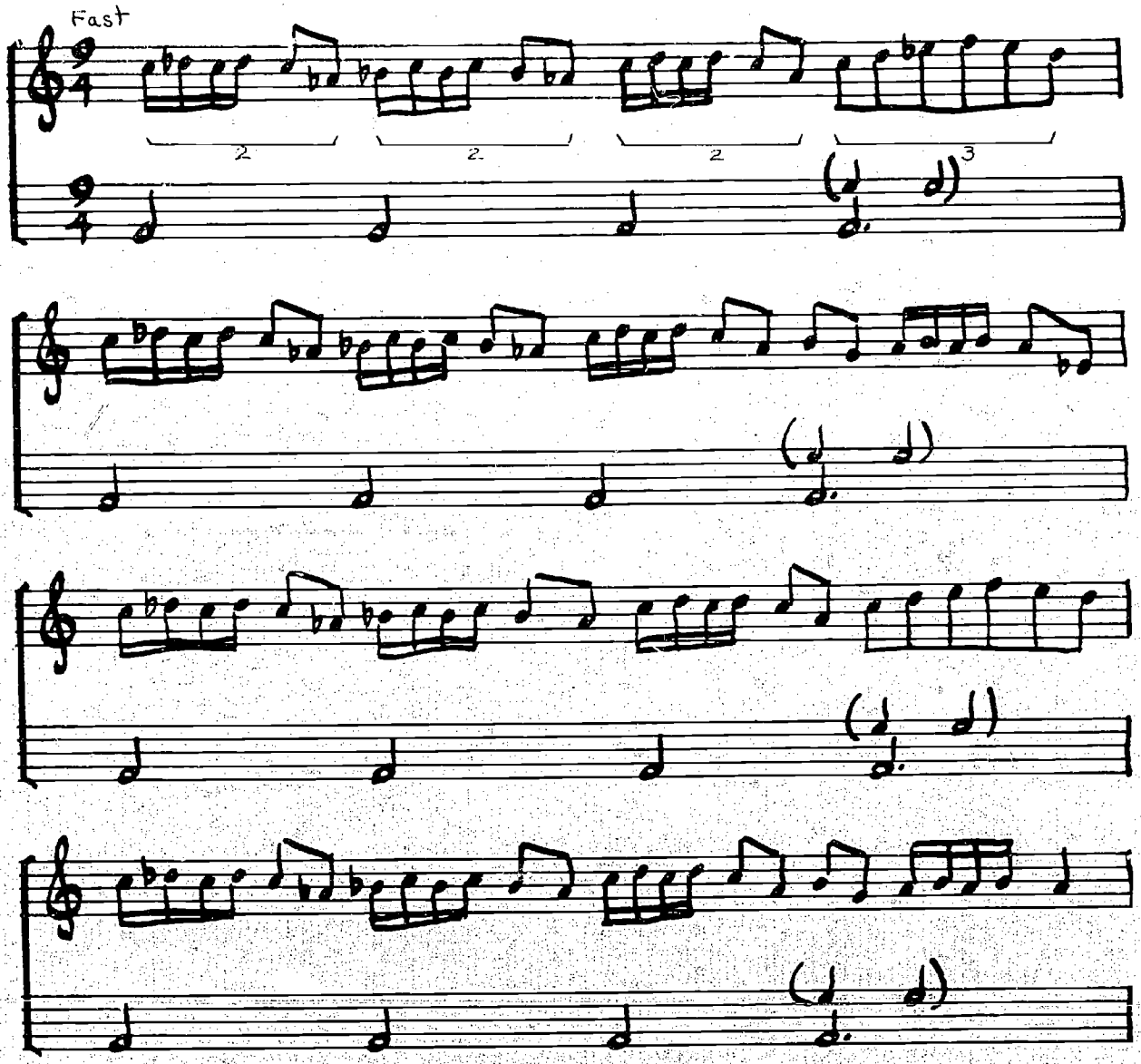
Example 1. "Makedonsko Horo"



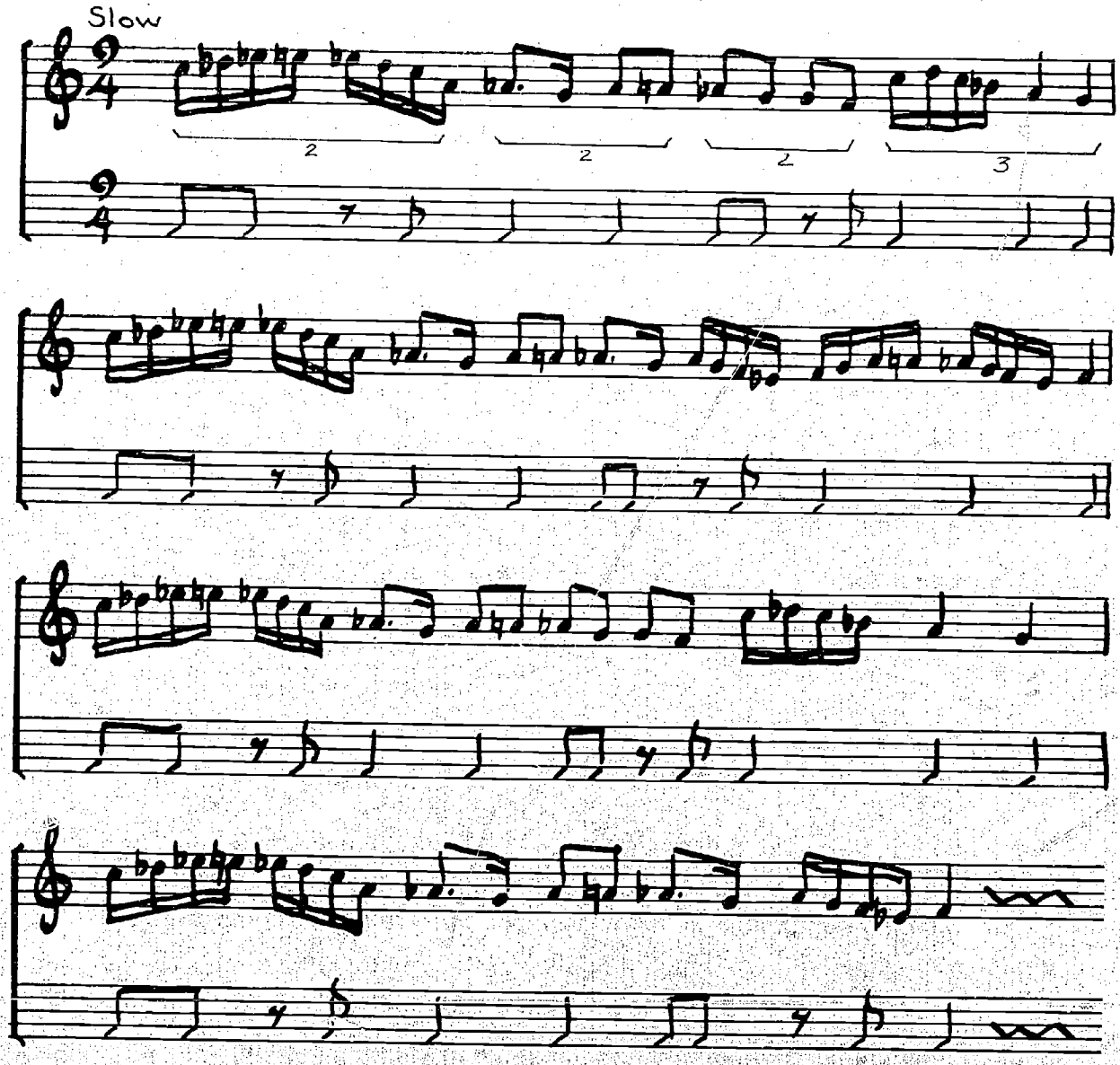
Example 2. "Tsone Milo Chedo" (Eleno Mome)



Example 3. "Cherkeska"



Example 4. "Zeybeck"



The above examples can be heard on the following recordings:

Example 1. "Makedonske Horo"
Played by Ali Chasmakov, tambura (long-necked lute) and Makhmed Dzhambazov, daire (large tambourine) (both gypsies)
Columbia 33 rpm KL 5378
World Library of Folk and Primitive Music: Bulgaria
Alan Lomax, Editor

Example 2. "Tsone Milo Chedo" (Eleno Mome)
Played by Bulgarian State Folk Ensemble
Columbia 33 rpm KL 5378

Example 3. "Cherkeska"
Folk Orchestra (accordion, clarinet, tambura, etc.)
Recorded by Dennis Boxell
Folkcraft 33 rpm 2P26
Bulgarian Folk Dances

Example 4. "Zeybeck" (Aegean Mountaineer Dance)
Played by the Gomidas Band
Roulette 33 rpm R-25228
Rendezvous in Istanbul